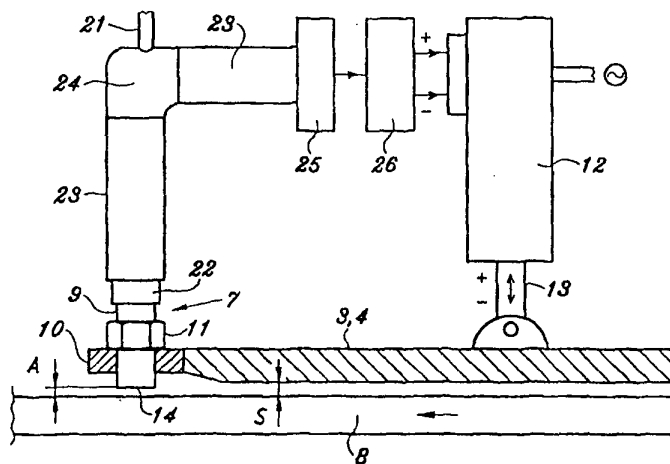




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| (21) International Application Number: PCT/SE97/01348 (22) International Filing Date: 14 August 1997 (14.08.97) (30) Priority Data: 9602991-3 15 August 1996 (15.08.96) SE (71) Applicant (for all designated States except US): SVENSKA ROTOR MASKINER AB [SE/SE]; P.O. Box 15085, S-104 65 Stockholm (SE). (72) Inventors; and (75) Inventors/Applicants (for US only): KARLSSON, Kurt [SE/SE]; Njupkärrsvägen 5, S-135 55 Tyresö (SE). LUNDIN, Stig [SE/SE]; Åkar Pelles Väg 1, S-139 00 Värmdö (SE). (74) Agent: WALDINGER, Åke; Svenska Rotor Maskiner AB, P.O. Box 15085, S-104 65 Stockholm (SE). | | (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report. In English translation (filed in Swedish). | |

(54) Title: METHOD AND DEVICE FOR SENSING A CLEARANCE



(57) Abstract

The invention relates to a method and to an arrangement for sensing the clearance between an object and an object-adjacent surface. The process of sensing the clearance is intended for application particularly in the case of difficult ambient conditions, such as in dirty, corrosive environments and under varying temperature and pressure conditions, e.g. to measure and hold constant the clearance between the sector plates (3, 4) of a regenerative rotary air preheater and the end surfaces of the rotor (2, 8). The invention is characterized in that the sensing device (7) used is comprised of a compressed-air operated pipe (9) which is mounted on the object (3, 4) and which includes a sound-emitting opening (14) located adjacent the surface (8), wherewith changes in the distance (S) between the object (3, 4) and the surface (8) are represented by changes that occur in the frequency of the pipe (9).

Claims

1. A method of sensing the clearance (S) between an object (3, 4) and an object-adjacent surface (8), and of generating a signal which is representative of the magnitude of said clearance and which is used in the adjustment of the clearance to a desired magnitude by means of a setting device (12, 32) that is controlled in dependence of said signal, **characterized** by providing the object (3, 4) with at least one compressed-air operated pipe (9) that includes a resonance tube that has been tuned to a specific frequency and that includes an opening (14, 15) which is placed adjacent said surface (8) such that the resonance frequency of the pipe (9) will change in dependence on the magnitude of the clearance (S), and by indicating and utilizing said frequency to control the setting device (12, 32).
2. An arrangement for carrying out the method of sensing the clearance (S) between an object (3, 4) and an object-adjacent surface (8) in accordance with Claim 1, **characterized** in that the object (3, 4) is provided with at least one pipe (9) which is operated by compressed-air taken from a compressed-air source and which includes a resonance tube that has been tuned to a specific frequency and that includes at least one sound-emitting opening (14, 15); in that the pipe (9) is positioned with the sound-emitting opening located adjacent said surface (8) so that the resonance frequency of the pipe will be dependent on the magnitude of the clearance (S); and in that a setting device (12, 32) for setting said clearance is adapted to be controlled by a device (25, 26) that indicates the frequency of the pipe (9).
3. An arrangement according to Claim 2, **characterized** in that the pipe (9) is a straight open pipe which is mounted on the object (3, 4) at right angles to said surface (8) with a clearance (A) between the surface (8) and the end surface (14) of the pipe (9).
4. An arrangement according to Claim 2, **characterized** in that the pipe (9) is a straight open pipe which is mounted on the object (3, 4) and is axially displaceable by means of the setting device (32), with one end (31) of the pipe lying against the surface (8) which therewith closes the end (31) of said pipe (9).

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- 5 An arrangement according to any one of Claims 1 - 4, wherein the object is a sector plate (3, 4) on a regenerative rotary heat exchanger, and said surface to which the clearance shall be measured is comprised of a peripheral flange (8) on the rotor of said heat exchanger, characterized in that the sector
- 5 plate (3, 4) is provided on at least one of its sides with a part (10) which projects out peripherally opposite the rotor flange (8) and which carries the sensing device (7) provided with a resonance tube.